

# HOIST BASICS

*High Performance Lifting*

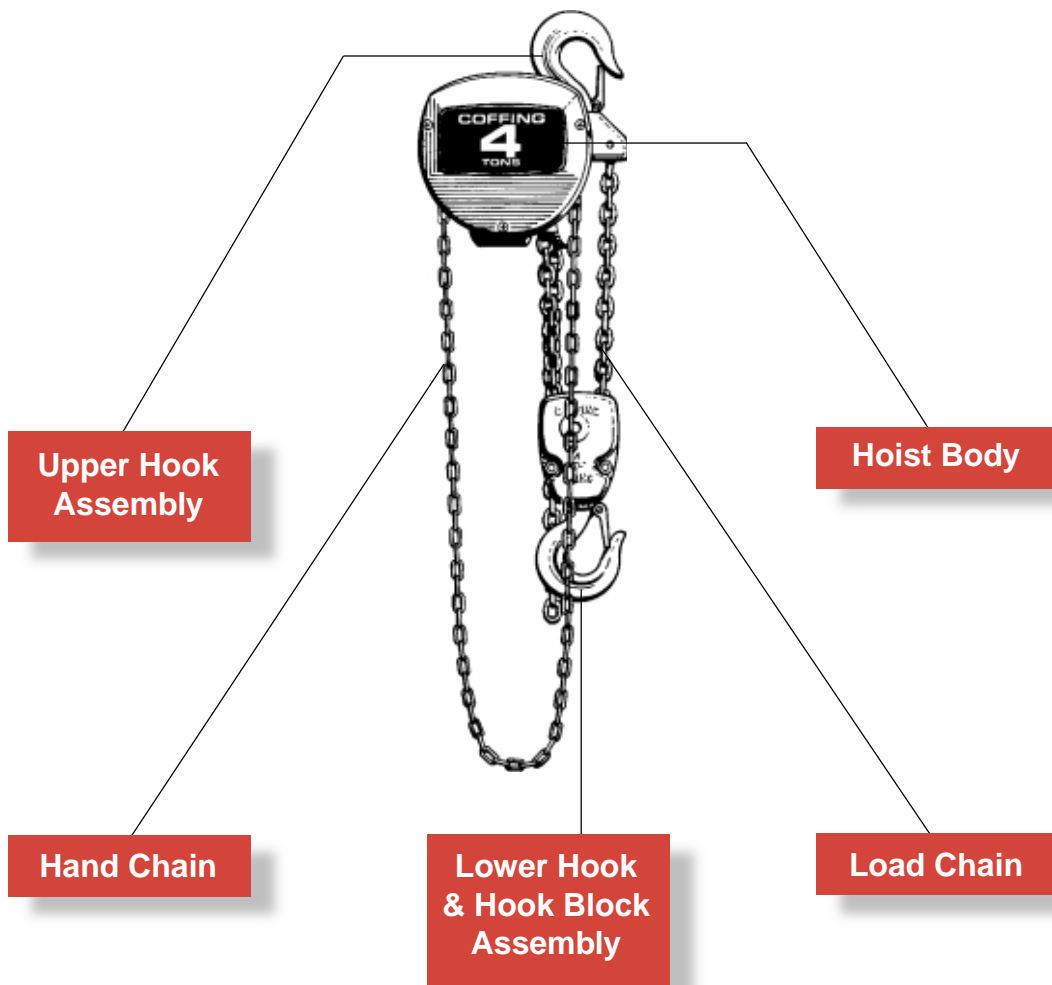
**COFFING<sup>®</sup>**  
**HOISTS**

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**A** hoist is simply a machine which is used for the lifting and lowering of heavy loads. In most applications, the hoist is usually suspended overhead by means of a hook, lug, or trolley. A hook or lug can be used to permanently mount a hoist in one location, or affix it to a trolley. A trolley is a vehicle which travels on an overhead rail or beam, normally used to move the hoist and its load from place to place.

Hoists and trolleys can be powered by hand, electricity, or air and are available in various shapes and configurations. The lifting means to suspend and move the load up or down in a hoist are normally link chain (coil chain), roller chain (similar to bicycle chain), or wire rope, but other materials such as high strength fabric, can be used in specialized applications.

### Hand Chain Operated Hoist & Components



A hand hoist, being a force multiplier, gives you the ability to lift very large loads (up to 50 ton) with ease by using mechanical advantage. Most hand hoists are used for infrequent maintenance applications where speed is not a requirement. They are considerably less expensive than powered hoists, but they require physical effort (pulling on the hand chain) to lift the load. They are not fast and should not be specified for continuous lifting applications, especially when long lifts are required.

## Hand Chain Operated Hoist (cont'd)

*Parameters to consider when specifying hand chain operated hoists are:*

- **Speed of lifts**
- **Height of lifts**
- **Frequency of lifts**
- **Weight of load**
- **Dollars available for purchase**

Many domestic hoist manufacturers (and some foreign manufacturers) offer overload protection devices for hand powered hoists, either as standard equipment, or as an added cost option. This device protects the user, the overhead structure and the hoist from an “excessive overload condition”. Several hoist manufacturers utilize a friction type, clutched hub, as a part of the hoist’s hand chain wheel. When the pull on the hand chain is great enough to slip the clutch and prevent the load from being lifted, the operator becomes aware that the hoist is overloaded.

## Typical Applications of Hand Chain Operated Hoists

In industry, hand chain hoists are most often used as an in-plant tool for periodic maintenance applications. A typical use might be for lifting pumps, generators, or other heavy equipment in water treatment facilities.

Whether it be used in construction, machine shops, automotive garages, farms, or in the private home, hundreds of applications exist for a hand chain hoist and many thousands are sold every year.

## Basic Information Needed For Selecting & Quoting

### *Hand Chain Hoists*

- **Capacity** (lbs. or tons) - the weight of the load to be lifted. A hoist’s rated capacity is the maximum load for which the hoist is designed by the manufacturer to lift.
- **Lift** (ft.) - the maximum length of travel required for raising and lowering the load. Standard lifts are generally 8 ft., although some companies standardize on 10, 15 and 20 ft. lifts.
- **Hand Chain Drop** - the length of chain required for the hoist’s hand chain. The drop is normally 2 ft. less than the length of lift, which prevents the chain from contacting the floor. The actual length of hand chain required is approximately 2 x lift minus 2 ft., since the chain is in a continuous loop when it travels around the hoist’s hand chain wheel.
- **Suspension** - how or where will the hoist be attached? Most hand chain hoists are sold with a top hook used for single point suspending. They can also be hooked on to a trolley, or built special with a top lug or eyebolt. This allows attachment to a low headroom style trolley for more permanent installations.
- **Accessories** - are there any other special requirements? Many hoist manufacturers offer special options such as chain containers to hold the excess load chain, plated chain for corrosion resistance and special spark resistant features for hooks and chain. Contact the manufacturer if these, or other options are not listed in the price books.

**Hand Hoist Pricing Examples**

1. A customer requires a 1 ton hand chain hoist with 8 ft. of lift and standard hand chain drop (refer to the sample price list below) - simply choose the 1 ton rated capacity model X-1 at a list price of **\$632**.
2. Same hoist as in example #1, but with a 20 ft. lift and hand chain drop in proportion to lift. Remember that as a general rule, hand chain drops are furnished from the factory at approximately 2 ft. less than lift, unless the customer requires a specific length (standard factory hand chain drops are in proportion to lift).

Select the base price of the hoist with a standard 8 ft. lift (\$632). For the additional 12 ft. lift required to arrive at 20 ft., use the pricing for extra chain per ft. of lift for model X-1 (\$10.20 + \$7.80 = \$18 extra chain price per ft. of lift for load and hand chain). Multiply \$18 x 12 ft. (\$216).

**Price of hoist = \$632 + \$216 or \$848.**

*Remember to add the price of any other special options if required.*

**Hand Hoist Sample Price Sheet**

**Hand Chain Hoist Models**  
Standard Lift 8 Feet, Standard Hand Chain  
Drop 6 Feet

Model Number	Product Code	Capacity Limiter Model	Rated Capacity (Ton)	Min. Dist. Betw. Hooks (In.)	No. Of Chns.	Chain Pull @ Rated Load (Lbs.)	Ship Wt. (Lbs.)	List Price	Extra Chain ** Per Lift Ft.	
									Load	Hand
X-1/2	A	CL-1/2	1/2	13 1/4	1	58	25	501	8.30	7.80
X-1	B	CL-1	1	13 3/8	1	58	40	632	10.20	7.80
X-1 1/2	C	CL-1 1/2	1 1/2	18 1/2	1	62	60	850	11.65	7.80
X-2	D	CL-2	2	18 1/2	1	83	60	963	11.65	7.80
X-3	E	CL-3	3	21 1/2	1	91	85	1332	16.45	7.80
X-4	F	CL-4	4	25 1/4	2	85	102	1587	23.30	7.80

\*\* Lifts other than 8 Ft. should be figured from 8 Ft. price. Hand chain drop is 2 Ft. less than lift.

It should also be mentioned that many hoist manufacturer's offer a lower cost, imported hand chain hoist as an alternative to their higher priced domestic brands. However, these imported units are normally of lesser quality and are not rated for heavy duty long term industrial applications.

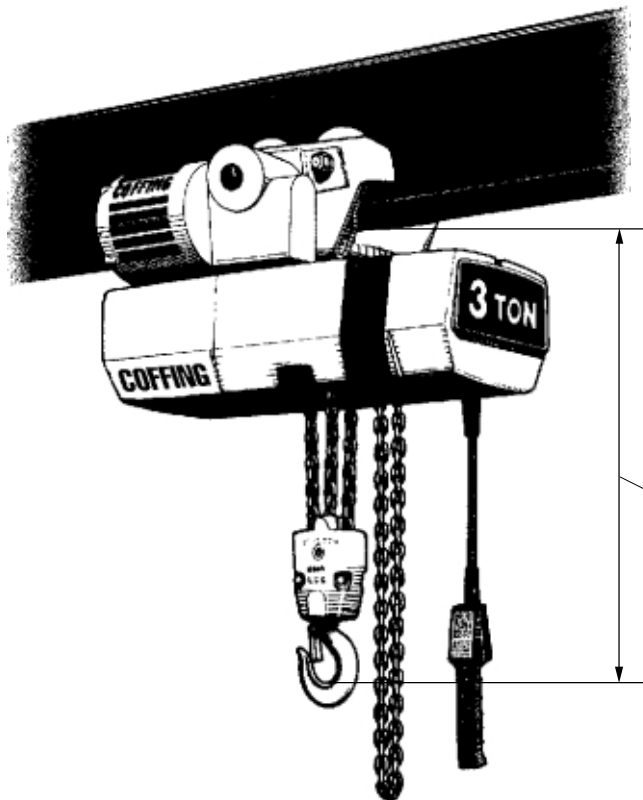
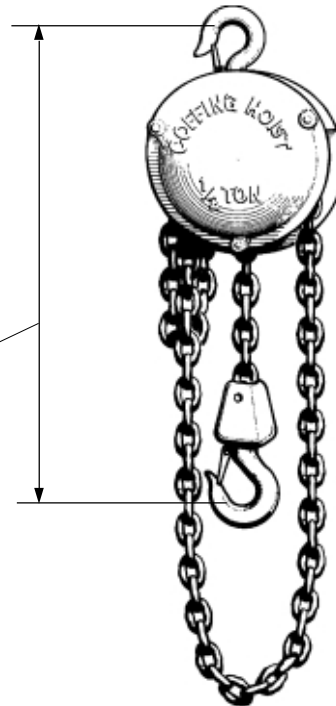
## Headroom

Headroom dimensions become important for applications which require operation in close quarters (low ceilings, obstructions, short lifts, etc.). Headroom information by model number and hoist capacity can be found in the manufacturer's sales specifications.

### Hook Mounted Units

The distance between the bearing surfaces of the upper and lower hook at the high hook position (or the minimum distance between hooks).

#### Headroom

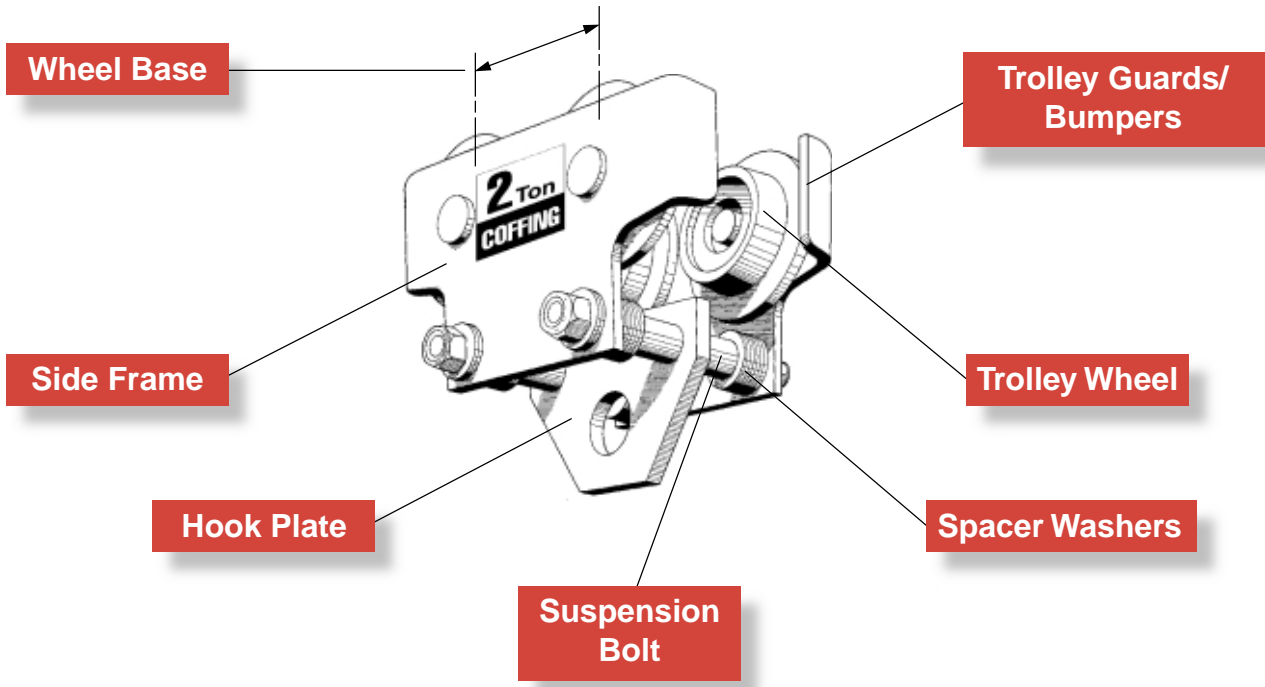


### Trolley Mounted Units

The distance from the bottom of the beam to the bearing surface of the lower hook, at the high hook position.

#### Headroom

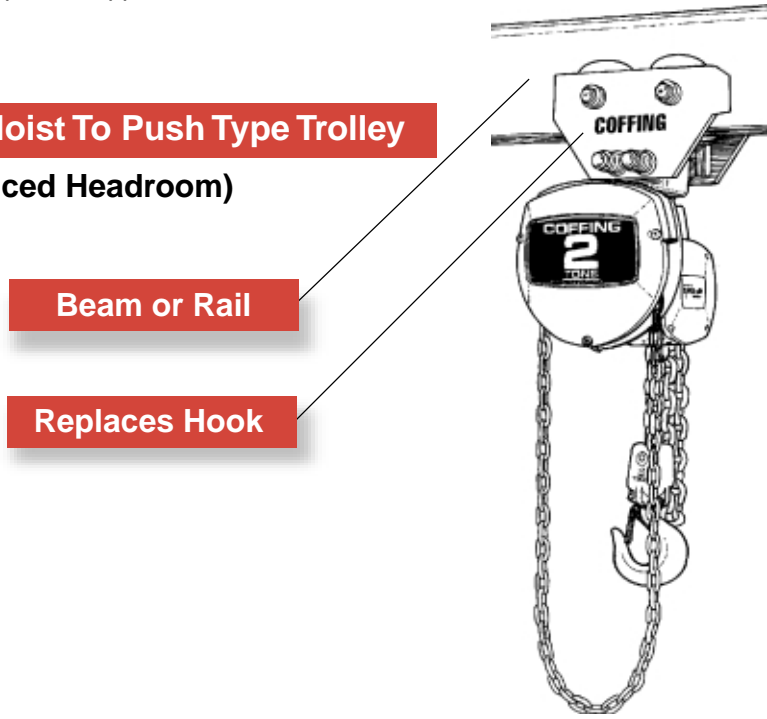
**Push Type Trolley & Components**



Trolleys are available in several different configurations. The most common are the hand powered (plain or push type) as shown above. Also available, are hand geared (hand chain driven) and motorized (electric or air powered).

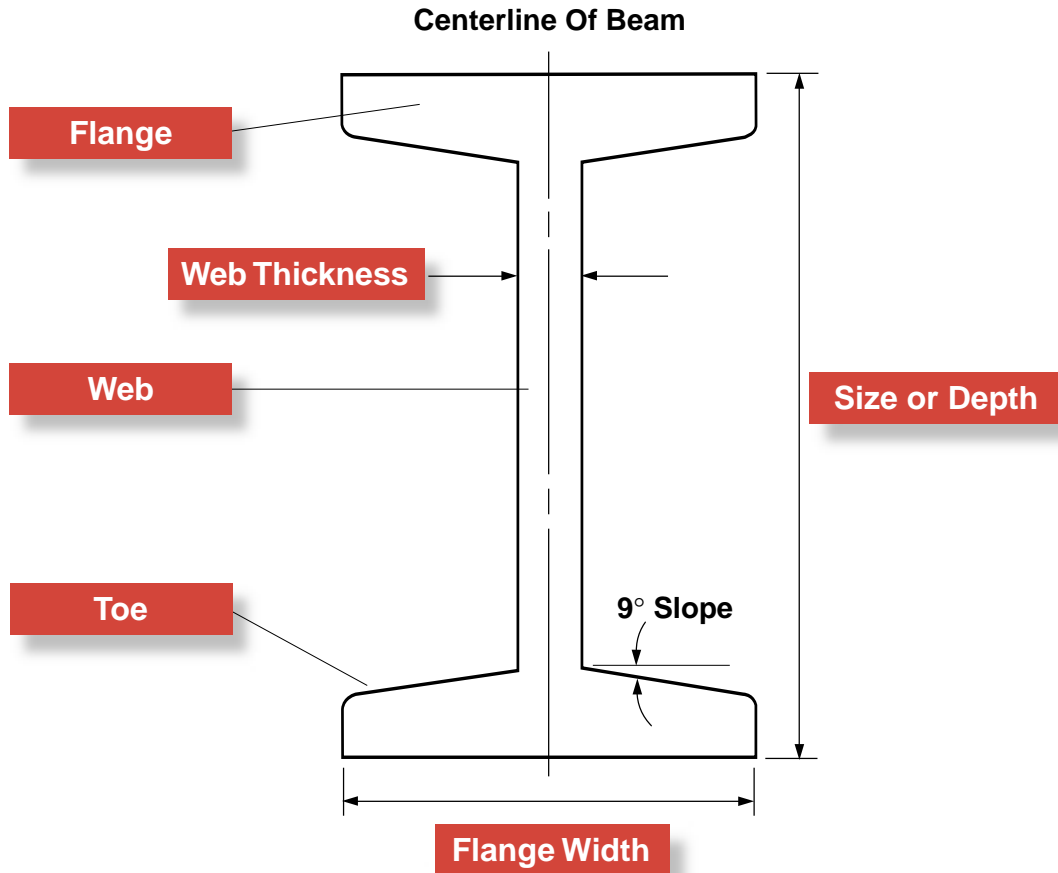
A push type trolley is normally used for moving light loads and if load spotting accuracy is not critical. The trolley is moved along the beam by pulling the hoist's load chain, usually in the lower hook block area. Hand geared trolleys are used for heavier loads, load spotting accuracy, or if the trolley is mounted very high. Powered trolleys are often used for heavy loads, longer distances, repetitive applications, or where faster speeds are required.

**Lug Mounted Hand Hoist To Push Type Trolley  
(For Reduced Headroom)**



## Beam Technology

### American Standard S-Beam



American Standard Beams (sometimes referred to as I-Beams or S-Beams) are classified by size and weight per foot. For example, a 6 inch high beam at 12.5 lbs. per foot can be identified from a beam specification table to have a lower flange width of  $3\frac{3}{8}$  inches. It can also be identified as a S6 x 12.5# x 3.33".

**When selecting a trolley for use on an American Standard Beam, the following information is required:**

- Confirmation that it is an American Standard Beam
- The lower flange width of the beam, or the size of the beam
- The beam height
- The trolley's adjustability range

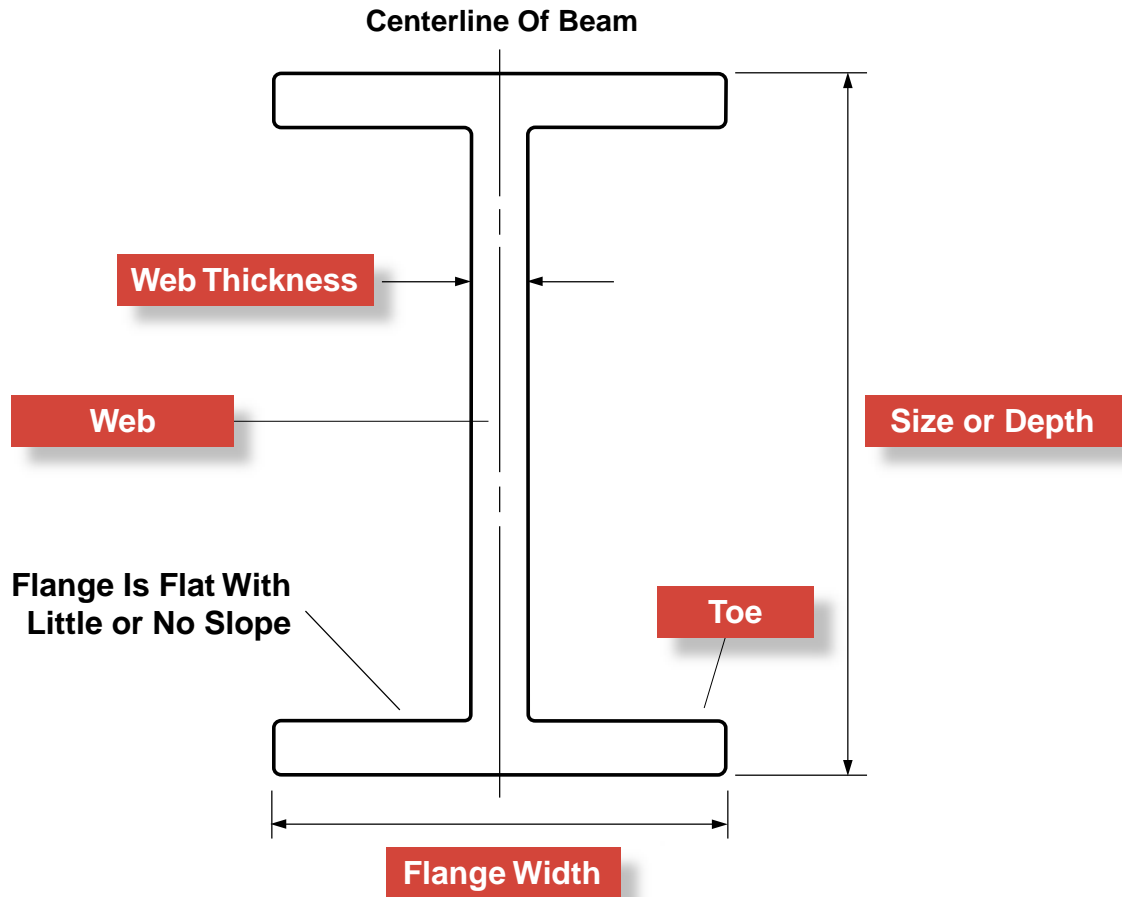
Most manufacturers offer trolleys which are adjustable to fit on a number of different beam size ranges. Also, most standard type trolley wheels have tapered or crowned wheel treads, so they can operate effectively on the characteristic 9° slope of an American Standard Beam. As you will see, other type beams are also used for trolley travel.

**Important Note:** The trolley selected must always be of the same, or greater capacity than the hoist on which it will be used.



Beam Technology (cont'd)

**Flat Flange or Wide Flange Beam**

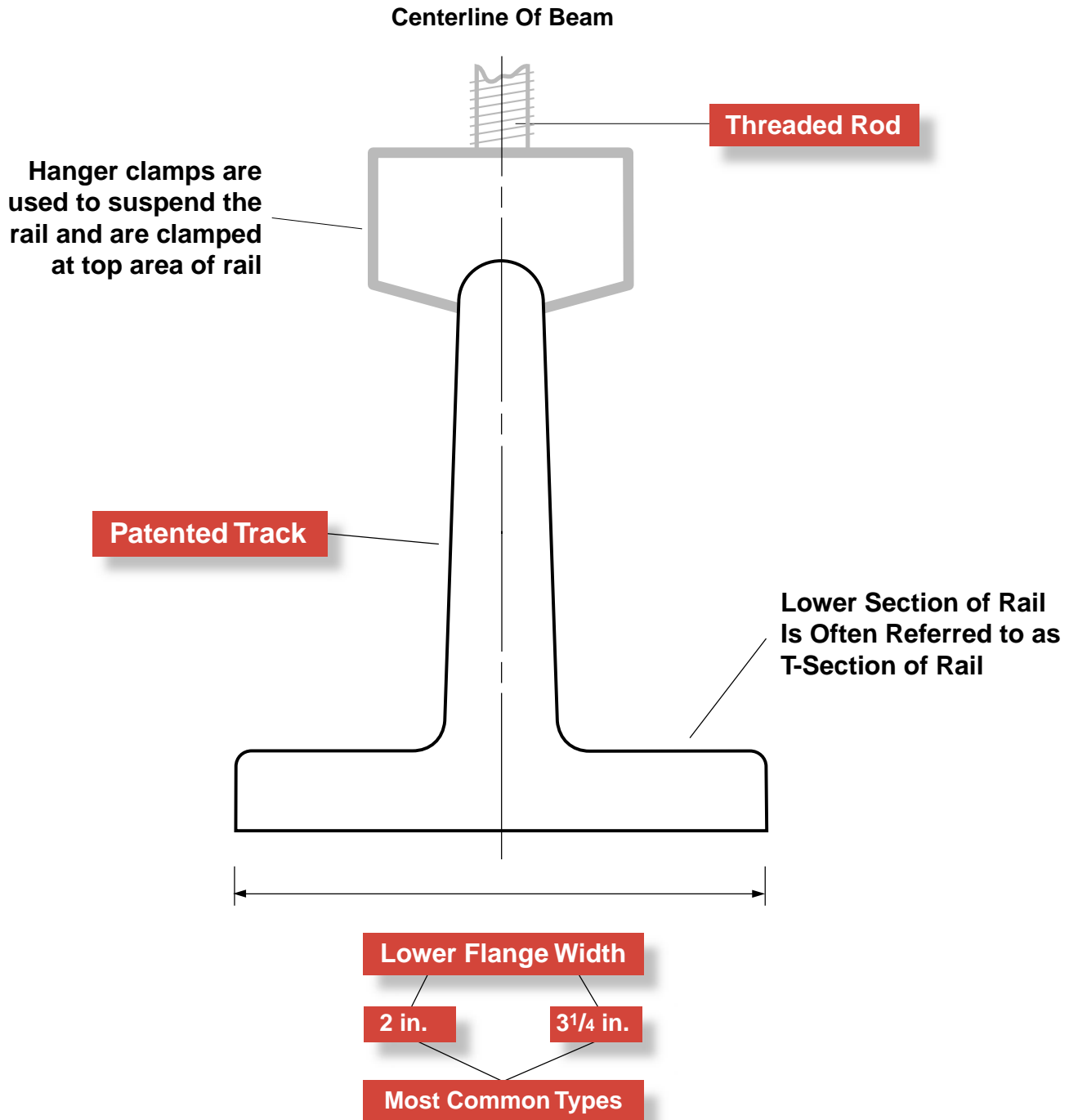


Wide Flange Beams, sometimes referred to as flat flanged beams, are similar to American Standard Beams, except that their flanges are flat (little or no slope). Like American Standard Beams, they are also classified by size and weight per foot. (Example - W10 X 88# x 10.26" is 10 inches high, weighs 88 lbs. per foot and has a flange width of 10.26 inches).

Wide Flange Beam usage has increased in recent years and are now used more often than the American Standard Beam. Most trolley manufacturers have increased their beam adjustability ranges to accommodate this change and many have standardized on "universal type trolleys". Universal type trolleys are trolleys with wheels designed to ride on either sloped, or flat beam flanges.

Beam Technology (cont'd)

**Patented Rail or Track**



Other lower flange widths such as  $4\frac{1}{16}$  in. and  $4\frac{1}{2}$  in. are offered by some rail manufacturers, as well as various rail depths.

**Beam Technology (cont'd)**

**Patented Rail or Track**

Patented rail has commonly been used for in-plant monorail track applications requiring light capacity loads. It can be used for straight track runs, but is specially suited for curves and systems which require switches or transfers which transfer the trolley from one track system to another. Most patented track manufacturers offer special carriers (trolleys) specifically designed to operate on their rail. However, many hoist manufacturer's can modify or design their trolleys to do the same, or can offer special lugs to adapt their hoist to a specific patented rail carrier.

Patented rail is made from higher strength materials than American Standard and Wide Flange Shapes and is available in several different configurations, depending on the manufacturer. The lower T-section (flange) of the rail is hardened to provide wear resistance and long life.

Common trade names or manufacturer's names of patented track are: American Monorail / Twin City Monorail, Cleveland Tramrail, Loudon, Spanmaster, Trambeam and Richard-Wilcox.

**Minimum Radius Curve**

The smallest curve on a rail or beam which the trolley will negotiate is called a minimum radius curve. Common minimum radius curves which trolleys will negotiate are 30, 36, 48 and 60 inches, although units are available for curves as small as 7 inches and as large as 8 feet or more, depending on trolley capacity and wheel base. This information can be found in the manufacturer's sales specifications.

**Trolley Pricing Example**

1. A customer requires a 1 ton push (plain) trolley to fit a 10 inch high beam with a 4<sup>5</sup>/<sub>8</sub> inch lower flange width (S10 x 25.4# x 4.66"). From the sample price list below, choose the 1 ton model V-1 trolley having a list price of **\$129**, since the beam adjustment range for this model suits the application. **Remember to add the price of any other special options.**

**\* Push Trolley**

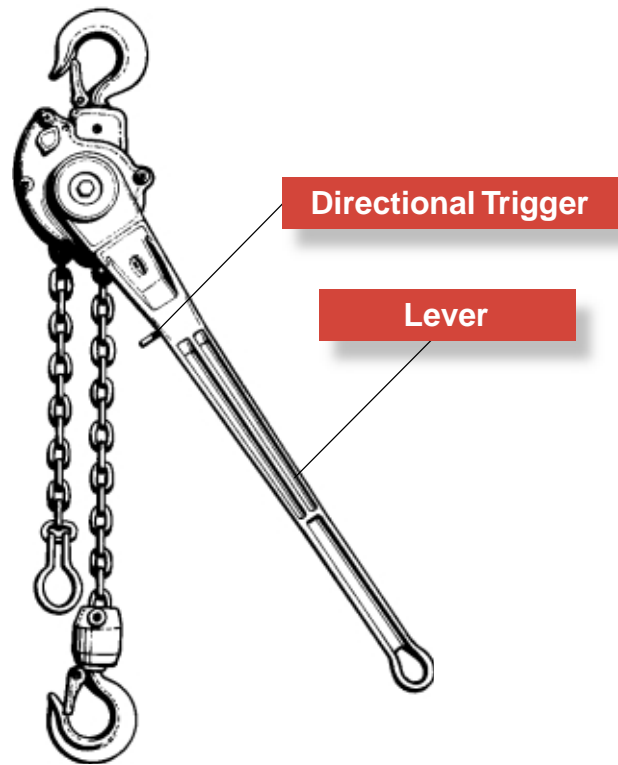
Model Number	Product Code	Rated Capacity (Ton)	Beam Height (In.)	Flange Width (In.)	Minimum Radius (In.)	Wheel Dia. (In.)	Ship. Wt. (Lbs.)	User Price
V-1/4	AV	1/4	4 - 12	2 5/8 - 5 1/16	7	2 3/4	11	107
V-1/2	BV	1/2	4 - 12	2 5/8 - 5 1/16	7	2 3/4	11	107
V-1	CV	1	4 - 12	2 5/8 - 5 1/16	7	2 3/4	12	129
V-1 1/2	DV	1 1/2	6 - 15	3 3/8 - 5 5/8	10	3 1/2	25	210
V-2	EV	2	6 - 15	3 3/8 - 5 5/8	10	3 1/2	25	370

Standard trolleys up to 2-ton will operate on 3 1/4 In. Patented Track. All trolleys will operate on Flat Flange (Wide Flange) beams with approximately equivalent adjustment range indicated. \* **Specify complete beam specifications when ordering.**

## Lever Operated Hoists

**Lever operated hoists**, sometimes referred to as “come-a-longs” or “pullers”, are used for stretching, pulling, tightening or positioning loads, but also have the ability to be used as a hoist in some applications.

The lever hoist design is similar to that of a hand chain operated hoist. Instead of using hand chain to move the load, the hand chain wheel is replaced with a lever or handle. Reciprocating operator input through the lever moves the load in small increments. Speed is not a characteristic of a lever tool.



### ***Parameters to consider when specifying lever hoists are:***

- **Frame and lever construction** - aluminum, steel or cast iron (customer preference).
- **Brake type** - friction type or ratchet and pawl. The friction type brake unit is used for more precise positioning requirements through its inherent characteristic of lifting or pulling in small increments. The ratchet and pawl unit is usually less expensive and is used in applications where accurate positioning is not a requirement.
- **Lifting medium** - coil chain, roller chain, wire rope or strap (fabric).
  1. Coil chain units are the most popular, since the chain is flexible in all directions and it is easy to inspect for wear.
  2. Roller chain is normally more expensive than coil chain, is more difficult to inspect and will not tolerate side pulls (side pulling - not pulling in a straight line from hook to hook). Unlike link chain, roller chain can be spliced together if additional length or repairs are required.
  3. Wire rope units are less expensive than chain units, but they are limited in capacity. Wire rope is more susceptible to wear and abuse and is more difficult to inspect. Rope strands can fray or break from the inside making it almost impossible to detect.
  4. Strap hoist units are used in the utility industry due to their non-conductive nature.
- **Lever Length** - length becomes a consideration for use in close quarter applications.
- **Lever Pull Value** - the effort exerted by the hoist operator on the end of the handle to pull or lift the load.
- **Dollars available for purchase**

**Lever Operated Hoists (cont'd)**

Some manufacturers offer overload protection devices for lever operated hoists as an added cost option. Friction type internal clutches, or overload handle indicators, are available to warn the hoist operator of an overload condition. The internal clutch is similar to that used on the hand chain operated hoist. One particular design of an overload handle is a mechanical device built in to the handle. The handle will deflect when an excessive handle force (overload) has been applied to the unit. This warns the operator that the tool is being overloaded.

**Typical Applications of Lever Operated Hoists**

Lever operated hoists have several in-plant uses and are heavily used in the construction, utilities, lumber, railroad and mining industries. General consumer use at home, or on the farm, also comprise a large number of the lever operated hoists sold. Some typical applications would be for positioning machinery, installing fences, holding loads together, opening railroad car doors, pulling pipe, stretching wires, straightening poles and others, too numerous to mention.

**Basic Information Needed For Selecting & Quoting**

***Lever Operated Hoists***

- **Capacity** (lbs. or tons)
- **Length Of Reach or Lift** (ft.)
- **Type Of Lifting Medium** - chain (link or roller), wire rope or strap

**Lever Operated Hoist Pricing Examples**

1. A customer requires a 3/4 ton lever hoist with 5 ft. of lift (refer to the sample price list below). Simply choose the 3/4 ton rated capacity model number L-3/4 at a list price of **\$297**.
2. Same hoist as in example number 1, but with a 25 ft. lift. Select the base price of the standard 5 ft. lift unit (\$297). For the additional 20 ft. of lift required to arrive at 25 ft., use the pricing for the extra chain per ft. of lift for model L-3/4 (\$8.30). Multiply \$8.30 x 20 ft. (\$166).

**Price of hoist = \$ 297 + \$ 166 or \$463.**

**Lever Operated Hoist**

Model Number	Product Code	Rated Capacity (Ton)	Standard Lift (Ft.)	Min. Dist. Betw. Hooks (In.)	Handle Length (In.)	Handle Pull @ Rated Load (Lbs.)	Ship Wt. (Lbs.)	User Price	Extra Chain Per Lift Ft.**
L-3/4	LA	3/4	5	12 7/8	20 1/2	61	18	<b>297</b>	<b>8.30</b>
L-1 1/2	LB	1 1/2	5	15	20 1/2	82	26	<b>417</b>	<b>11.00</b>
L-3	LC	3	5	18 3/4	20 1/2	87	42	<b>540</b>	<b>22.00</b>
L-6	LD	6	5	22	20 1/2	93	72	<b>1019</b>	<b>44.00</b>

## Overhead Electric Hoists

An electric overhead hoist is often specified when the application calls for more frequent and faster lifting, such as on a factory production line. An electric hoist with a motorized trolley is ideal for repetitive lifts which are required to travel long distances. A wide range of capacities and speeds are available for both hoists and motorized trolleys.

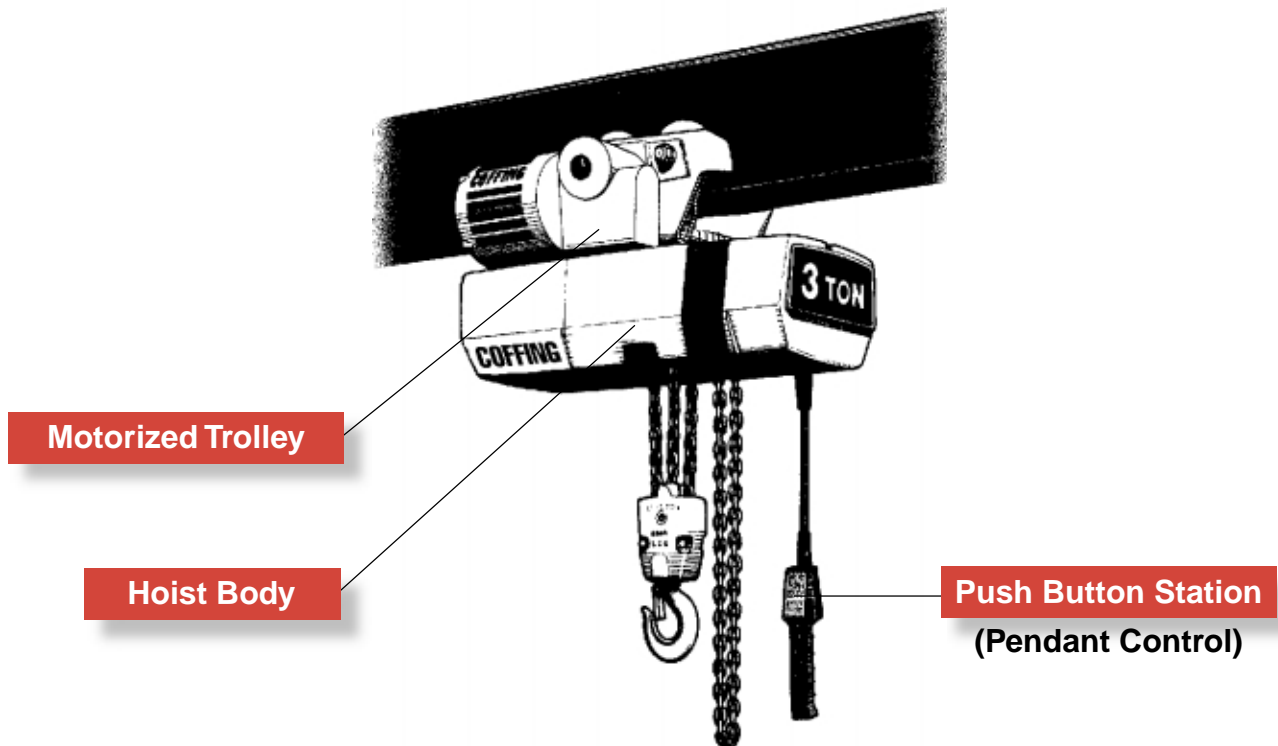
Mechanically, an electric hoist is very similar in design to a hand hoist. To put it simply, physical operator input (force applied to hand chain or lever) is replaced by an electric motor and controls. The controls are needed to start and stop the hoist motor and reverse its direction. A push button pendant station is normally used to control the hoist and/or trolley motions.

Electric powered hoists are available in hook, lug or trolley (push type, hand geared or motorized) suspensions.

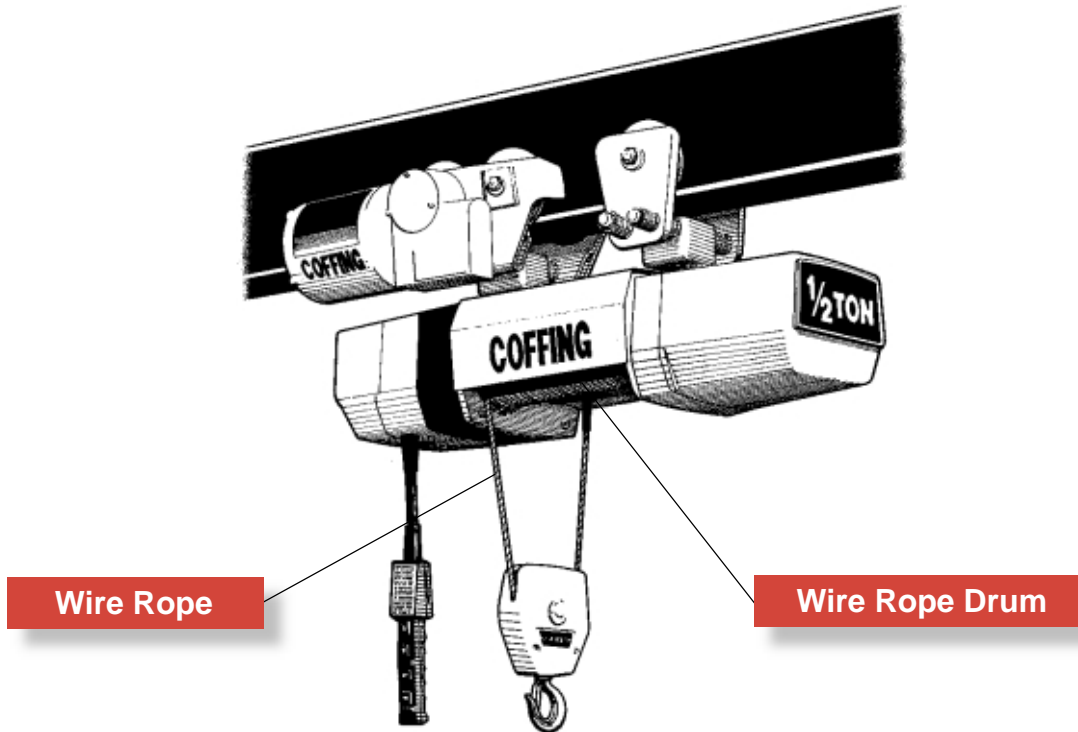
The electric hoists lifting medium can be either chain (coil or roller type) or wire rope. Wire rope hoists are generally used for higher capacities, faster speeds, smoother and higher lifts. However, chain hoists with the same capabilities as wire rope hoists have become increasingly popular in recent years. Coil and roller chain hoists are the most popular in the 3 ton and smaller sizes because these hoists are generally smaller in size, lighter and less expensive to manufacture.

All chain hoists provide true vertical lift (load does not vary from the hoist centerline during hoisting or lowering). Specially constructed wire rope units can also be furnished to provide true vertical lift when required.

### Electric Chain Hoist With 4-Wheel Motorized Trolley



**Electric Wire Rope Hoist With 6-Wheel Motorized Trolley**



*Parameters to consider when specifying overhead electric hoists are:*

- Speed of lifts
- Frequency of lifts
- Lifting height
- Weight of load
- Duty cycle
- Power supply available
- Dollars available for purchase

**Duty Cycle**

Duty cycle is one of the most important considerations when choosing an electric hoist for a particular application. Duty cycle can be most easily defined as “a specified number of operations at stated intervals”. For an electric hoist, duty cycle is how much work the hoist must perform in a given period. The weight of the load, lifting distance and frequency of operation, all play an important role in determining the duty cycle capability of an electric hoist.

The Hoist Manufacturer’s Institute has classified duty cycle requirements by hoist class - either class H1, H2, H3, H4 or H5, as illustrated on page 16. Most hoist manufacturer’s classify their hoists by this criteria and catalog this information for customer use. Generally speaking, all industrial grade electric hoists available on the US market today meet at least H3 duty cycle as a minimum requirement.

Overhead Electric Hoists (cont'd)

**Hoist Duty Service Classification**

Hoist Class	Service Classification	Typical Areas Of Application
H1	Infrequent or Standby	Powerhouses and utilities, infrequent handling. Hoists are used primarily to install and service heavy equipment, where loads frequently approach hoist capacity, with periods of utilization being infrequent and widely scattered. <b>(max. on time 8 min./hr., 75 starts/hr. max.)</b>
H2	Light	Light machine shop, fabrication and service and maintenance work. Loads and use are randomly distributed, with capacity loads handled infrequently. Total running time does not exceed 10-15% of the work period. <b>(max. on time 8 min./hr., 75 starts/hr. max.)</b>
H3	Standard	General machine shop, fabrication, assembly, storage and warehousing. Loads and use are randomly distributed. Total running time does not exceed 15-25% of the work period. <b>(max. on time 15 min./hr., 150 starts/hr. max.)</b>
H4	Heavy	High volume handling in steel warehouses, machine shops, fabricating plants, mills and foundries. Common applications include heat treating and plating operations. Total running time normally approaches 50% of the work period. <b>(max. on time 30 min./hr., 300 starts/hr. max.)</b>
H5	Severe	Bulk handling of material in combination with buckets, magnets or other heavy attachments. Equipment is often cab operated. Duty cycle approaches continuous operation. User must specify exact details of operation, including weight of attachments. <b>(max. on time up to continuous, 600 starts/hr. max.)</b>

Most electric hoist manufacturers offer overload protection devices for their electric powered hoists, either as standard equipment, or as an added cost option. Some use internal friction type clutches, while others use electrical shut-off devices, or low torque hoist motors.

**Power Supply Voltage**

Electric hoists are available in several different power supply voltages. Common AC power supplies used in the USA are: 115-1-60 and 230-1-60 (single phase, 60 hertz household voltages), 208-3-60, 230-3-60, 460-3-60 and 575-3-60 (3 phase, 60 hertz industrial voltages). Single phase hoists are available for certain models dependent on motor horsepower and hoist capacity. Three phase hoists are usually available in all capacities. If required, special motor voltages can usually be furnished at a small extra charge. Voltage information can be found in the manufacturer's sales specifications.

**Typical Uses for Overhead Electric Hoists**

Electric hoists have many uses and are sold through many different supply outlets. Standard products can easily be obtained from local supply houses, while more specialized products are often obtained through material handling specialists, or crane builders.



**Overhead Electric Hoists (cont'd)**

Electric hoists are commonly found in industrial plants for the raising, lowering and transporting material throughout the facility and positioning components in process or assembly operations.

***Some more specific uses/markets are:***

- **Shipping, receiving, and warehousing**
- **Automotive industry**
- **Fabricating shops/machine shops**
- **Foundries and steel mills**
- **Metal plating**
- **Lumber mills**
- **Food handling / pharmaceutical**
- **Textiles**
- **Chemical plants**
- **Manufactured housing industry**



**Basic Information Needed For Selecting & Quoting  
Overhead Electric Hoists**

- **Capacity** (lbs. or tons)
- **Lift** (ft.)
- **Lifting Speed** in ft. per min (fpm)
- **Lifting Medium** - chain or wire rope. Is true vertical lift required?
- **Power Supply Voltage**
- **Control Voltage** - a reduced control circuit voltage usually (24 or 115 volts) accomplished by the use of a transformer in the hoist. This prevents the higher power supply voltage from reaching the operator through the hoist's push button station.
- **Push Button Cord Length** - standard length is approximately 4 ft. less than lift.
- **Power Cord Length** - standard lengths vary by manufacturer and/or hoist model.
- **Abnormal Operating Conditions** - Will the hoist function properly in its environment? (corrosive, outdoor, dusty/dirty, extreme temperature ranges, hazardous locations, etc.)
- **Duty Cycle Requirements** - Does the specific hoist you select meet the application's duty requirements?
- **Type of Suspension** - Hook (swivel or rigid), lug, trolley (push, hand geared or motorized).
- **Headroom Requirements**
- **Trolley Hand Chain Drop** (ft.) - for hand geared trolleys.
- **Trolley Speed** (fpm) - motorized trolleys
- **Beam Size** and type that the trolley will operate on.
- **Accessories** - any special options or special requirements needed?

**Overhead Electric Hoists (cont'd)**

**Overhead Electric Hoist Pricing Examples**

1. A customer requires a 1 ton, 16 fpm, electric chain hoist with a 20 ft lift, push button drop in proportion to hoist lift, 3 phase, 230-3-60 power supply, hook mount. From the example price list below, choose the 1 ton, 3 phase model 2016-20 having a list price of **\$2104**.
2. A customer requires a 1 ton, 16 fpm, electric chain hoist with 18 ft. lift and motorized trolley, 27 ft. long push button cord, 115 volt power supply, trolley to fit an American Standard S-Beam with a 4 inch lower flange width. Trolley power cord is to be 35 ft. long. Trolley speed required is 35 fpm.

From the sample price list below, start with the standard 10 ft. lift price of hoist with motorized trolley (model number 2016-10) having a list price of **\$3898**. The standard trolley will fit the beam size required (see foot note at bottom of price list). For the additional 8 ft. of lift required to arrive at a 18 ft. lift, refer to the special price adders shown on page 19. Use \$10.20 for model 2016 and multiply by 8 to arrive at **\$81.60** for the extra load chain required. Use \$3.55 and multiply by 21 to arrive at **\$74.55** for the additional push button cord required (remember that the standard push button length is 6 ft. or 4 ft. less than lift). Use \$3.55 and multiply by 35 ft. to arrive at **\$134.55** to obtain the trolley power cord adder.

**Total price of unit = \$3898 + \$81.60 + \$ 74.55 + \$134.55 = \$4188.70.**

**Note:** The standard trolley speeds are either 35 or 75 fpm (no added charge for 35 fpm).

**Electric Chain Hoist Sample Price List**

Model Number	No. of Chns.	Std. Lift	Lift Spd.	Mtr. H.P. 1 Ph.	Mtr. H.P. 3 Ph.	Top Hook			Trolleys						
						A Dim.	Ship Wt.	User Price	A Dim.	Push		Geared		Motorized	
										Ship Wt.	User Price	Ship Wt.	User Price	Ship Wt.	User Price
<b>1/2 Ton</b>															
1016-10	1	10	16	1/2	1/2	16 7/8	110	1765	17 11/32	155	2014	165	2267	190	3697
1032-10	1	10	32	1	1	16 7/8	117	1966	17 11/32	162	2215	172	2468	197	3898
1009-15	1	15	9	1/4	1/4	16 7/8	114	1766	17 11/32	159	2015	169	2307	194	3698
1016-15	1	15	16	1/2	1/2	16 7/8	114	1824	17 11/32	159	2073	169	2365	194	3756
1032-15	1	15	32	1	1	16 7/8	121	2025	17 11/32	166	2274	176	2566	201	3957
1009-20	1	20	9	1/4	1/4	16 7/8	118	1826	17 11/32	163	2075	173	2406	198	3758
1016-20	1	20	16	1/2	1/2	16 7/8	118	1884	17 11/32	163	2133	173	2464	198	3816
1032-20	1	20	32	1	1	16 7/8	125	2085	17 11/32	170	2334	188	2665	205	4017
<b>1 Ton</b>															
2008-10	2	10	8	1/2	1/2	18 1/4	120	1869	18 11/16	165	2118	175	2371	200	3801
2012-10	1	10	12	3/4	3/4	16 7/8	118	1918	17 11/32	163	2167	173	2420	198	3850
2016-10	1	10	16	1	1	16 7/8	121	1966	17 11/32	166	2215	176	2468	201	3898
2032-10	1	10	32	N/A	2	23	310	3418	21 9/16	355	3667	365	3920	390	5350
2004-15	2	15	4	1/4	1/4	18 1/4	123	1970	18 11/16	170	2219	180	2511	205	3902
2008-15	2	15	8	1/2	1/2	18 1/4	125	1970	18 11/16	170	2219	180	2511	205	3902
2012-15	1	15	12	3/4	3/4	16 7/8	123	1987	17 11/32	168	2236	178	2528	203	3919
2016-15	1	15	16	1	1	16 7/8	126	2035	17 11/32	171	2284	181	2576	206	3967
2032-15	1	15	32	N/A	2	23	319	3518	21 9/16	364	3767	374	4059	399	5450
2004-20	2	20	4	1/4	1/4	18 1/4	132	2071	18 11/16	181	2320	185	2651	216	4003
2008-20	2	20	8	1/2	1/2	18 1/4	130	2071	18 11/16	175	2320	185	2651	210	4003
2012-20	1	20	12	3/4	3/4	16 7/8	128	2056	17 11/32	173	2305	183	2636	208	3988
2016-20	1	20	16	1	1	16 7/8	131	2104	17 11/32	176	2353	186	2684	211	4036
2032-20	1	20	32	N/A	2	23	328	3618	21 9/16	373	3867	383	4198	408	5550

**Notes:** Push button drop is 4 ft. less than lift. Hoist equipped with 15 ft. power cord except motorized trolley models - power cord not included (optional - specify if needed). Standard trolleys fit 6-18 inch high American Standard S-Beams with flange widths from 3.33 in. thru 6 inches. \* Standard trolley speed are 35 & 75 fpm. Optional speeds available, see options price page.

**Overhead Electric Hoist Pricing (cont'd)**
**Special Lifts, P.B. Drops, Power Cords & Hand Chain Drops**

Price per extra foot of lift - Add to 10 foot lift price.	No. of Chains	User Price
1009, 1016, 1032	1	8.30
2004, 2008	2	16.60
2012, 2016	1	10.20
4006, 4008	2	20.40
2032	1	16.45
<b>Price per extra foot of P.B. drop</b> ( Base Unit = 6 ft.)		3.55
<b>Price per extra foot of Power Cord</b> (Base Unit = 15 ft., except Motorized Trolley = Optional)		3.55
<b>Price per extra ft. of Hand Chain drop for Geared Trolley</b> (Base Unit = 8 ft.)		7.80
Zinc Plated Chain - multiply price by amount of lift on hoist, all capacities.	1	2.70
	2	5.40
	3	8.10
	4	10.80
<b>Zinc Plated Hook</b> (top or bottom)	Each	49.00

Most hoist companies offer several additional options for electric hoists. An example on electric chain hoists would be chain containers and other accessories as indicated below. Individual option prices (if required) would be added to the total price of the hoist.

<b>Special Motor Voltage</b>	
200-208 Volt, 3 Phase, 60 Hz	N/C
575 Volt, 3 Phase, 60 Hz	N/C
220/380 Volt, 3 Phase 50 Hz	P.O.A.*
<b>Additional Options</b>	
Motorized Trolley Brake	416
Bronze Wheels for CT & MT Trolley (per wheel)	70
Safety Lugs for 2-Wheel Trolley (where applicable)	60
Rubber Bumpers for CT & MT Trolley (Qty. 4)	210
Auxillary Contacts (N.O. or N.C.) - Each Contactor	35
Trolley Limit Switch - Lever Type, customer to supply Actuating Bar	322
Special Color Paint - Air dry enamel: white, black, red, yellow, orange, green, silver	190
Epoxy Paint	569
Magnaflux Inspection of Hook	70
115 Volt Control Circuit	N/C
Fused & Grounded Transformer (Secondary) - Per Transformer	11
Motor Thermostat - Per Motor	46
Controls for Tandem Operation - includes 3-Position Selector Switch	P.O.A.*
Stainless Steel Limit Switch Shaft	Standard
Zinc plated Hook	49

\* Price On Application

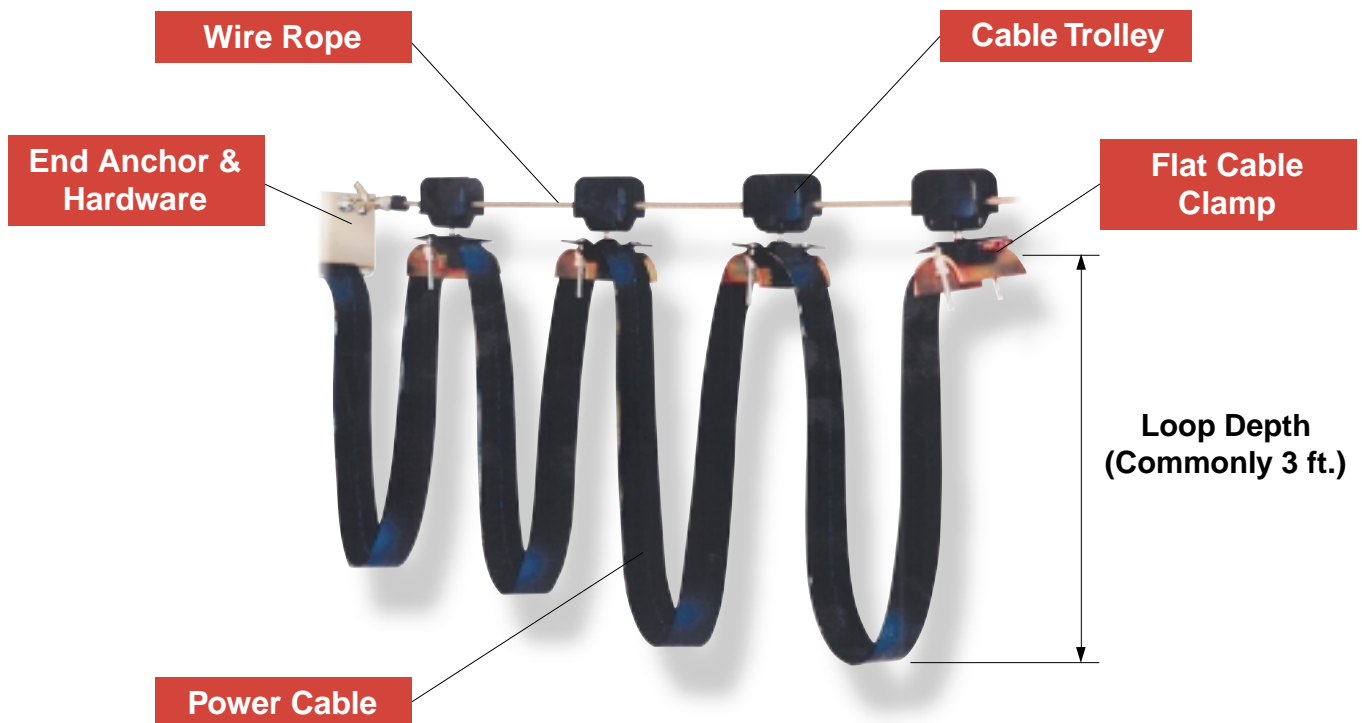
## Runway Wiring / Electrification Systems

*Typical methods of supplying electrical power to traveling overhead electric hoists systems are:*

- **Festoon systems** (sometimes called a taglines or stretched wire systems)
- **Cord reels**
- **Runway conductor bar systems**

Most hoist and crane manufacturers offer electrification systems as accessory items. Examples of some types are illustrated as follows:

### Tagline with Flat or Round Power Cable (Flat Cable Shown)



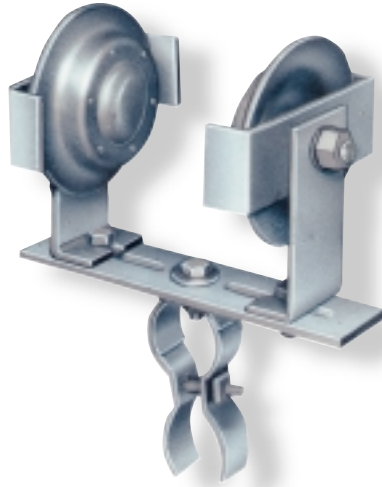
Festoon Systems are sold by some manufacturers either in complete kit form, by trolley runway length, or by the foot. Stretched wire systems are somewhat limited in length due to cable sag which can occur in longer runway lengths (such as those exceeding 50 ft.). Common practice is to limit stretched wire systems to 100 ft. maximum.

Festoon systems are the most simple and usually the least expensive. They are used when loop depth does not cause interference problems with equipment, or in low headroom applications. When required, multiple conductors can be furnished at relatively low cost.

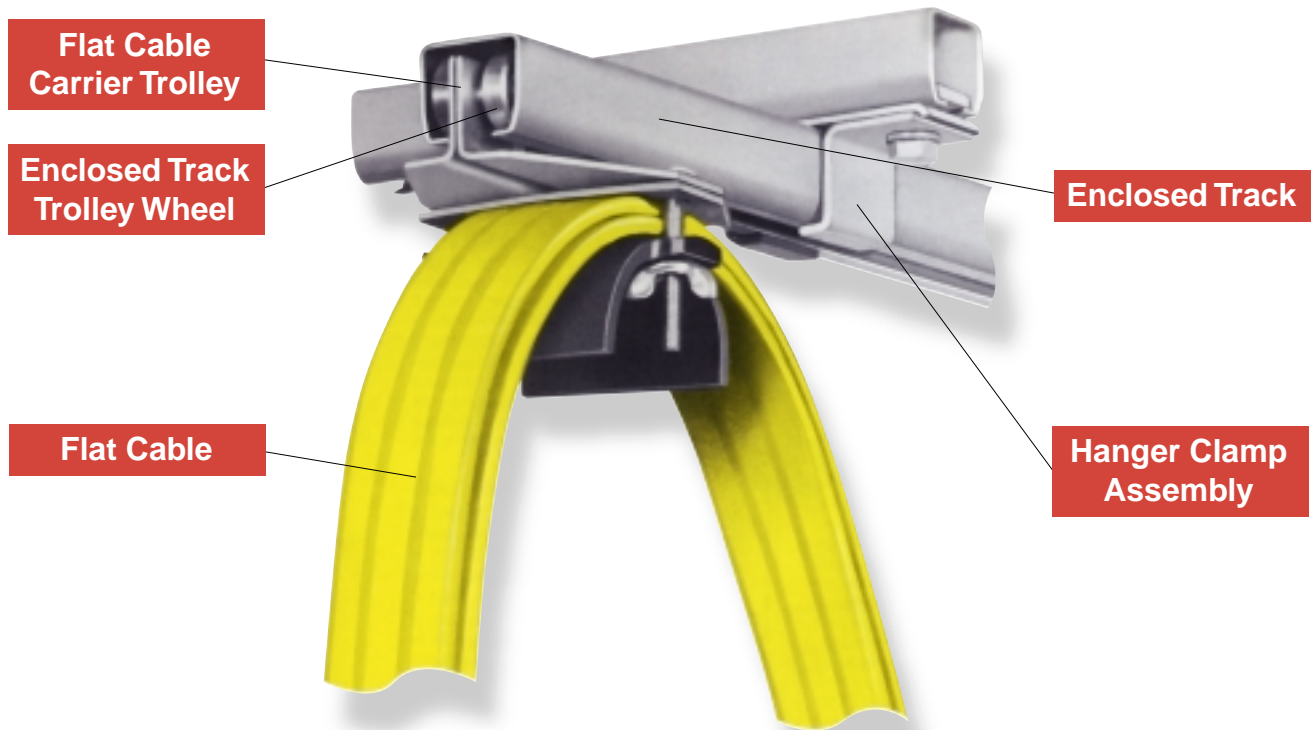
For longer festoon lengths, beam trolleys, or rigid enclosed track systems with internal trolleys, are used to support the power cords to eliminate sag.

Runway Wiring (cont'd)

**Beam Trolley with Round Cable Clamp**



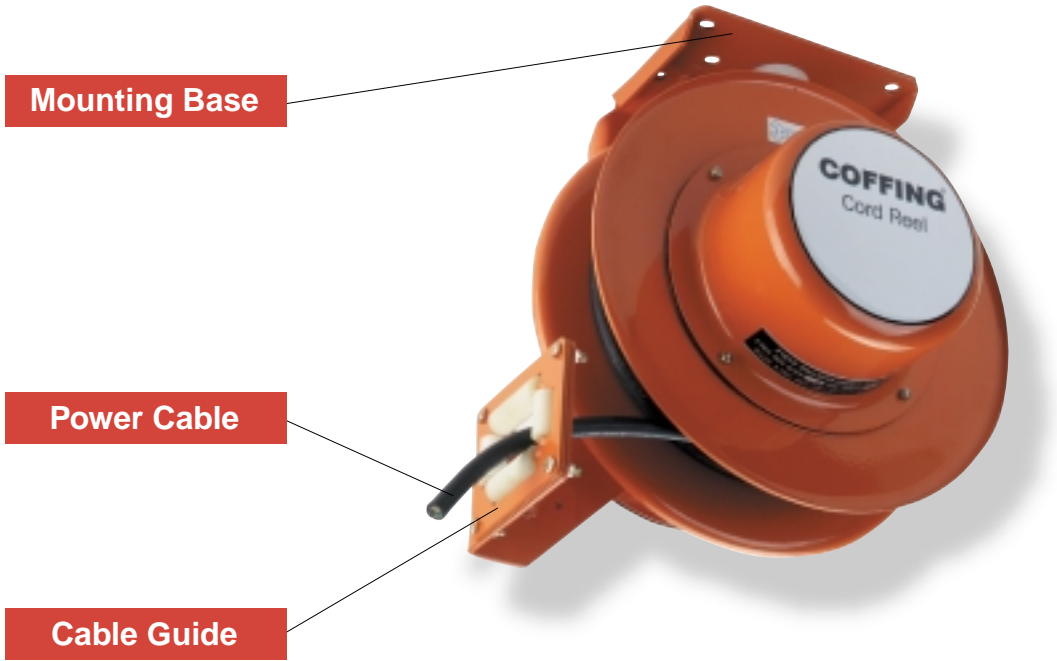
**Enclosed Type Track**



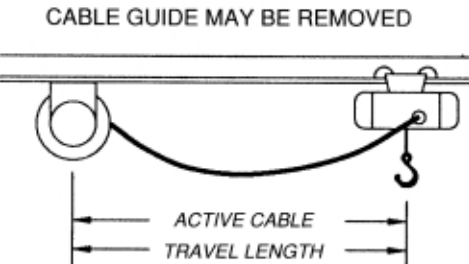
Round cable carriers can also be furnished with enclosed track systems.

Runway Wiring (cont'd)

**Cord Reel (Cable Reel)**



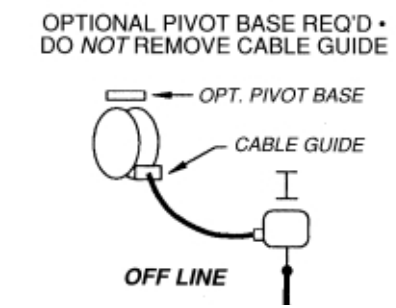
**One-Way Payout**



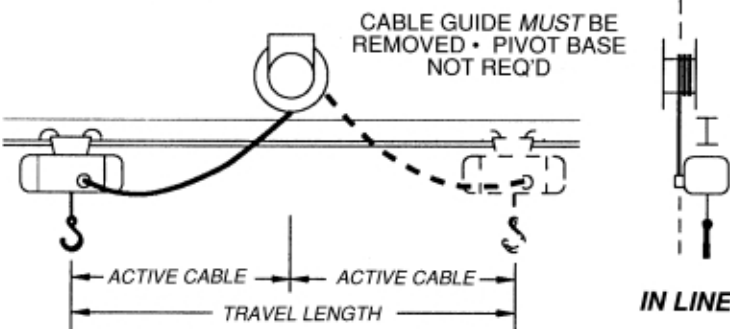
**Cord reels** are most commonly used with small capacity hoists and trolleys for distances up to 50 ft., although larger specialty reels are available with much longer lengths. Larger reels, such as those with multiple conductors, longer lengths, or those with additional current capacity, become expensive. At this point, alternative methods, such as festooning or conductor bar systems may become more cost effective to use.

It should be mentioned that small capacity hoists with push type trolleys may not be suitable for cord reel applications. The spring tension of the reel may be sufficient enough to pull the hoist and trolley along the beam if there is not a large enough load on the hoist. Also, the spring tension of the reel may make it awkward or strenuous to pull the trolley down the beam, especially when the cable is fully extended from the reel.

**One-Way Payout Off Line**

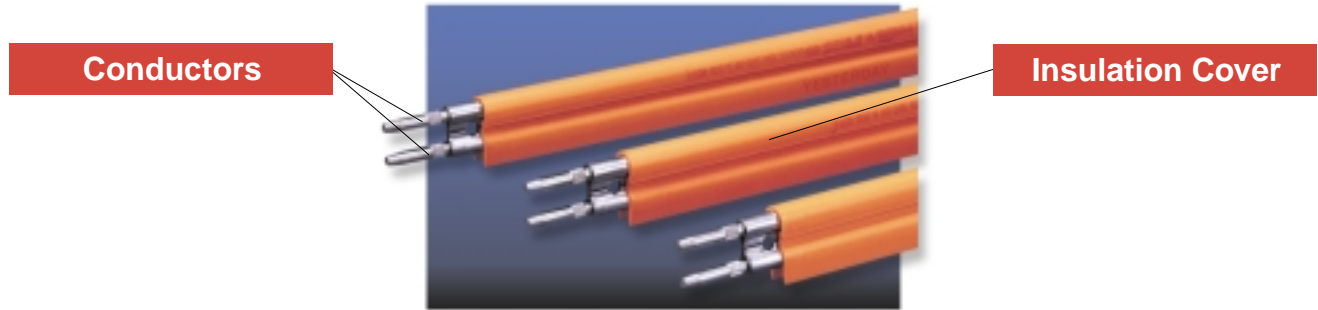


**Two-Way Payout In Line**

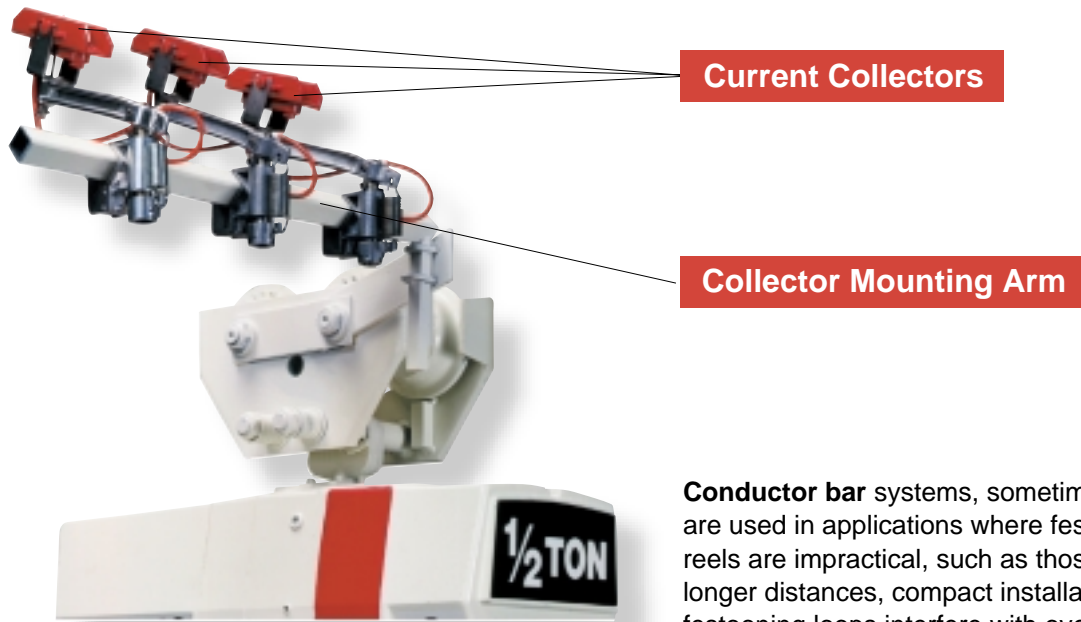


Runway Wiring (cont'd)

**Conductor Bar Systems**



**Current Collectors with Mounting Arm  
(3-Phase Arrangement Shown)**



**Conductor bar** systems, sometimes called bus bars, are used in applications where festooning or cord reels are impractical, such as those which require longer distances, compact installation, or where, festooning loops interfere with overhead equipment.

The current collectors mounted on the trolley collector mounting arm are spring loaded to engage the conductor bar. Conductor bars are commonly furnished in 10 foot lengths and are supported by brackets mounted to the beam every 5 feet. Power is fed to the collectors through the conductor bars by incoming power feeds which can be mounted at any point along the runway.

Conductor bar system manufacturers furnish their systems either by the foot, by system length, or by individual components. Most all hoist manufacturers have the personnel to help you recommend and specify the electrification system which your particular application requires.

## **⚠ WARNING**

**Overloading and Improper Use Can Result In Injury**

**To Avoid Injury:**

- Do not exceed working load limit, load rating, or capacity.
- Do not use to lift people or loads over people.
- Use only alloy chain and attachments for overhead lifting.
- Read and follow all instructions.

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